

WHAT IS CLAIMED IS:

1. A process for the removal of sulfur from a hydrocarbon stream, wherein said hydrocarbon stream is a combination of cracked gasoline and diesel fuel, said process comprising:

5 (a) contacting said hydrocarbon stream with a composition comprising a zinc oxide, a silica-containing material, an aluminum-containing material selected from the group consisting of alumina, aluminate, and combinations thereof, and a promoter wherein at least a portion of said promoter is present as a reduced valence promoter and in an amount which will effect the removal of sulfur from said hydrocarbon stream in a
10 desulfurization zone under conditions such that there is formed a desulfurized hydrocarbon stream and a sulfurized composition;

(b) separating said desulfurized hydrocarbon stream from said sulfurized composition thereby forming a separated desulfurized hydrocarbon stream and a separated sulfurized composition;

15 (c) regenerating at least a portion of said separated sulfurized composition in a regeneration zone so as to remove at least a portion of the sulfur contained therein and/or thereon thereby forming a regenerated composition;

20 (d) reducing said regenerated composition in an activation zone
so as to provide a reduced composition having a reduced valence promoter
content therein which will effect the removal of sulfur from a hydrocarbon
stream when contacted with same; and thereafter

(e) returning at least a portion of said reduced composition to
said desulfurization zone.

2. A process in accordance with claim 1, wherein said diesel
fuel is light cycle oil.

3. A process in accordance with claim 1 wherein said
desulfurization in step (a) is carried out at a temperature in the range of from
about 100°F to about 1000°F and a pressure in the range of from about 15 to
about 1500 psia for a time sufficient to effect the removal of sulfur from said
5 stream.

4. A process in accordance with claim 1 wherein said
desulfurization in step (a) is carried out at a temperature in the range of from
400°F to 900°F.

5. A process in accordance with claim 1 wherein said
regeneration in step (c) is carried out at a temperature in the range of from
about 100°F to about 1500°F and a pressure in the range of from about 10 to

about 1500 psia for a time sufficient to effect the removal of at least a portion
5 of the sulfur from said separated sulfurized composition.

6. A process in accordance with claim 1 wherein air is
employed in step (c) as a regeneration agent in said regeneration zone.

7. A process in accordance with claim 1 wherein said
regenerated composition from step (c) is subjected to reduction with hydrogen
in step (d) in said reduction zone which is maintained at a temperature in the
range of from about 100°F to about 1500°F and at a pressure in the range of
5 from about 15 to about 1500 psia and for a period of time sufficient to effect a
reduction of the valence of the promoter content of said regenerated
composition.

8. A process in accordance with claim 1 wherein said
separated sulfurized composition from step (b) is stripped prior to introduction
into said regeneration zone in step (c).

9. A process in accordance with claim 1 wherein said
regenerated composition from step (c) is stripped prior to introduction to said
reduction zone in step (d).

10. The cracked gasoline product of claim 1.

11. The diesel fuel product of claim 1.